REMARKS

Applicant wishes to thank the Examiner for considering the present application and in the courtesy of the telephone interview. In the Final Office Action dated June 30, 2004, claims 1-27 are pending in the application. Claims 4, 8 and 15 have been canceled. Applicant respectfully requests the Examiner for to reconsider the rejections in view of the amendments above and remarks below.

The Examiner objects to the insertions of the previous Office Action under 35 U.S.C. §132 for introducing new matter into the disclosure. Applicant respectfully submits that new matter has not been added to the disclosure as set forth on a case-by-base basis below. With respect to the amendment of equation 1, applicant respectfully believes that the normalized tire slip value is well known in the art. The formula set forth below obviously has an error. The errors in the document correspond to printing errors due to a type font misconfiguration in our computers. In Equation (1), applicant added an ω_i, which is set forth directly below the equation. Although the variables are set forth below the equation, the ω_i is missing from the equation. An unit analysis of Equation (1) renders the equation as set forth previously as nonsensical. A radius can not be subtracted from a velocity. The units must match. The units of the wheel rotation are in units or radians per second which when combined with the effect of rolling radius in meters makes meters divided by seconds. This is a velocity value that may be subtracted from V, the longitudinal vehicle speed. This equation is used later on as the third portion of Equation (3). Therefore, this equation has a basis later on in the specification. Therefore a basis for changing Equation (1) is set forth in the current specification on page 9, line 4.

With respect to the amendment of paragraph [0021], the q_r is set forth in the variables at the end of paragraph [0021]. Therefore it is obvious that q_r should have been in the formula.

In paragraph [0022] the omission of $\dot{\omega}_i$ is also an obvious error. The subscript i was provided in the formula with the $\dot{\omega}$ missing. By reviewing the second paragraph of Equation (3), it is obvious that the equation in paragraph [0026] has an $\dot{\omega}_i$ missing. Likewise, Equation (2) is a rewritten form of the equation in paragraph [0026] and therefore it is proper for the $\dot{\omega}_i$ to be placed in paragraphs [0022], [0023], and [0026]. There is a second equation in

paragraph [0026] wherein the $\dot{V}$ was added. This is obviously a mistake and the rewritten form in Equation (3) clearly shows the *M* and the $\dot{V}$.

Equation (7) is also an obvious error. In Equation (7) the subscript i is obviously missing. Also, in paragraph [0032] the $\frac{S}{\phi}$ is also missing. This is also believed to be obvious. By looking at the right side of the equation in Figures 8 and 9, the portion $\kappa_{ih} - \kappa_i$ is shown divided by ϕ, the boundary layer thickness. Because each of these are incorporated into the right side values of Equations (8) and (9), it is obvious that these derivations are missing a portion. No new matter has been added by correcting the $\frac{S}{\phi}$ value and the $\kappa_{ih} - \kappa_i$ value. This same logic holds true for Equation (10), which was also amended to include the subscript i in the right side of the equation. Equation (8) clearly shows the subscript i.

The Examiner appeared to agree with the above additions in the telephone interview.

Claims 1-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Naito* (5,657,229) in view of *Grote (6,293,632)*. Applicant has amended the independent claim to clarify that the modified brake torque signal is determined a saturation function of a threshold slip and the actual wheel slip, an approximated friction curve slope, and the normal force. Support for this amendment can be found in paragraph 28, and Equation (10). Applicant respectfully submits that neither the *Naito* reference nor the *Grote* reference does not teach or suggest determining a modified brake torque a saturation function of a threshold slip and the actual wheel slip, an approximated friction curve slope, and the normal force. Applicant respectfully requests the Examiner for reconsideration of this rejection.

The Examiner appeared to agree that this rejection was also overcome by the previous amendment in the interview.

In the interview the Examiner believes that U.S. Patent 5,928,302 contains each of the elements of the claimed invention. However, this reference is very different than that of the present application for several reasons. First, there is no teaching of a brake torque calculation using a saturation function as set forth in the present claims. It should be noted that the *Fukada* reference does not even use a sliding mode control method. The claims of the present application are based upon a sliding mode control. The present claims recite a slip ratio. This is not the same as a slip angle. The slip angle and slip rate are very different. The

present claims claim a slip ratio which is the ratio of the longitudinal wheel speed to the vehicle speed. The slip angle is the arc tangent of the ratio of the wheel lateral speed to the longitudinal speed. Specifically, claims 5-8 of the *Fukada* reference specifically recite slip angles and slip ratios. The *Fukada* reference specifically uses slip angle to compute a coefficient C4 in Fig. 10 that is used to compute a target wheel slip ratio not a braking torque as is performed in the present claims. The claims of the present application are specifically directed to calculating a wheel braking torque. None of the equations in the *Fukada* reference calculate a wheel braking torque. Applicant therefore believes that the present application is allowable in view of the newly cited art, and the previously cited art.

In light of the above remarks, applicant submits that the application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments the Examiner is respectfully requested to call the undersigned attorney.

Please charge any fees required in the filing of this amendment to Deposit Account 50-0476.

Respectfully submitted,

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Date: 9/30/04